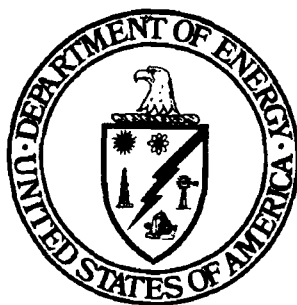


ENERGY MATERIALS COORDINATING COMMITTEE (EMaCC)

Fiscal Year 1995

December 1996



Annual Technical Report

**U.S. Department of Energy
Office of Energy Research
Office of Basic Energy Sciences
Division of Materials Sciences
Washington, DC 20585**



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INTRODUCTION

The DOE Energy Materials Coordinating Committee (EMaCC) serves primarily to enhance coordination among the Department's materials programs and to further effective use of materials expertise within the Department. These functions are accomplished through the exchange of budgetary and planning information among program managers and through technical meetings/workshops on selected topics involving both DOE and major contractors. In addition, EMaCC assists in obtaining materials-related inputs for both intra- and interagency compilations.

Six topical subcommittees have been established to focus on materials areas of particular importance to the Department; the subcommittees and their respective chairmen are:

Electrochemical Technologies - Richard Kelly, ER-132, (301) 903-6051
Metals and Intermetallics - David J. Beecy, FE-72, (301) 903-2787
Radioactive Waste Containers - Alan Berusch, RW-22, (202) 586-9362
Semiconductors - Jerry Smith, ER-132, (301) 903-4269
Structural Ceramics - Charles Sorrell, EE-232, (202) 586-1514
Superconductivity - James Daley, EE-142, (202) 586-1165

Membership in the EMaCC is open to any Department organizational unit; participants are appointed by Division or Office Directors. The current active membership is listed on the following three pages.

The EMaCC reports to the Director of the Office of Energy Research in his or her capacity as overseer of the technical programs of the Department. This annual technical report is mandated by the EMaCC terms of reference. This report summarizes EMaCC activities for FY 1995 and describes the materials research programs of various offices and divisions within the Department.

The Chairman of EMaCC for FY 1995 was Cynthia Carter. The compilation of this report was performed by Yok Chen, EMaCC Executive Secretary for FY 1996, with the assistance of FM Technologies, Inc.

Dr. Debbie Haught
Office of Transportation Technologies
Chairman of EMaCC, FY 1996

MEMBERSHIP LIST
DEPARTMENT OF ENERGY
ENERGY MATERIALS COORDINATING COMMITTEE

| ORGANIZATION | REPRESENTATIVE | PHONE NO. |
|--|---------------------------|--------------|
| ENERGY EFFICIENCY AND RENEWABLE ENERGY | | |
| <i>Building Technology, State and Community Programs</i> | | |
| Building Systems | John Talbott, EE-41 | 202/586-9455 |
| <i>Industrial Technologies</i> | | |
| Industrial Energy Efficiency | Scott Richlen, EE-221 | 202/586-2078 |
| Waste Materials Management | Kurt D. Sisson EE-222 | 202/586-6750 |
| Materials Processing Division | Matthew McMonigle, EE-234 | 202/586-2082 |
| Advanced Industrial Materials | Charles Sorrell, EE-232 | 202/586-1514 |
| Separation Division | Brian Volintine, EE-233 | 202/586-1739 |
| <i>Transportation Technologies</i> | | |
| Advanced Transportation Materials | Sidney Diamond, EE-34 | 202/586-0832 |
| | Jim Eberhardt, EE-34 | 202/586-1694 |
| | Debbie Haught, EE-34 | 202/586-2211 |
| <i>Utility Technologies</i> | | |
| Wind/Hydro/Ocean Technologies | William Richards, EE-121 | 202/586-5410 |
| Geothermal Technology | Raymond LaSala, EE-122 | 202/586-4198 |
| Photovoltaic Technology | Richard King, EE-131 | 202/586-1693 |
| Advanced Utility Concepts | James Daley, EE-142 | 202/586-1165 |
| | Christine Platt, EE-142 | 202/586-8943 |
| | Chris Kang, EE-142 | 202/586-4563 |

| ORGANIZATION | REPRESENTATIVE | PHONE NO. |
|--|-----------------------------|--------------|
| ENERGY RESEARCH | | |
| <i>Basic Energy Sciences</i> | | |
| Materials Sciences | Iran L. Thomas, ER-10 | 301/903-3081 |
| Metallurgy and Ceramics | Robert J. Gottschall, ER-13 | 301/903-3427 |
| | Alan Dragoo, ER-131 | 301/903-4895 |
| | Yok Chen, ER-131 | 301/903-3428 |
| | Helen Kerch, ER-131 | 301/903-3428 |
| | John Mundy, ER-131 | 301/903-4271 |
| Solid State Physics and Materials Chemistry | W. Oosterhuis, ER-132 | 301/903-3426 |
| | Jerry Smith, ER-132 | 301/903-3426 |
| | Richard Kelly, ER-132 | 301/903-3426 |
| Chemical Sciences | Stephen A. Butter, ER-142 | 301/903-2367 |
| Engineering and Geosciences | Oscar P. Manley, ER-15 | 301/903-5822 |
| Advanced Energy Projects | Cynthia Carter, ER-16 | 301/903-5995 |
| Safety and Health | Albert Evans, ER-13 | 301/903-3427 |
| | Michael Teresinski, ER-13 | 301/903-5155 |
| <i>Laboratory Management</i> | | |
| Laboratory Technology Transfer | Ted Vojnovich, ER-80 | 202/586-2343 |
| <i>Fusion Energy</i> | | |
| Fusion Technologies | F. W. (Bill) Wiffen, ER-543 | 301/903-4963 |
| ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT | | |
| <i>Waste Operations</i> | | |
| Waste Management Projects | Doug Tonkay, EM-30 | 301/903-7212 |
| <i>Science and Technology</i> | | |
| Research and Development | Stanley M. Wolf, EM-54 | 301/903-7962 |
| NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY | | |
| <i>Space and National Security Programs</i> | | |
| Defense Energy Projects | John W. Warren, NE-52 | 301/903-6491 |
| Radioisotope Power Systems | William Barnett, NE-53 | 301/903-3097 |
| <i>Naval Reactors</i> | David I. Curtis, NE-60 | 703/603-5565 |

Membership List

| ORGANIZATION | REPRESENTATIVE | PHONE NO. |
|---|---|------------------------------|
| <i>Nuclear Safety Self-Assessment</i> | | |
| Nuclear Quality Assurance | John Dowicki, NE-84 | 301/903-7729 |
| CIVILIAN RADIOACTIVE WASTE MANAGEMENT | | |
| <i>Analysis and Verification</i> | Alan Berusch, RW-2 | 202/586-9362 |
| DEFENSE PROGRAMS | | |
| <i>Research and Advanced Technology</i> | | |
| Research and Technology Development | Bharat Agrawal, DP-11 | 301/903-2057 |
| <i>Inertial Confinement Fusion</i> | Carl B. Hilland, DP-28 | 301/903-3687 |
| FOSSIL ENERGY | | |
| <i>Advanced Research</i> | David J. Beecy, FE-72 James P. Carr, FE-72 | 301/903-2787 301/903-6519 |

ORGANIZATION OF THE REPORT

The FY 1995 budget summary table for DOE Materials Activities is presented on pages 6-8.

Following the budget summary table is a set of detailed program descriptions for the FY 1995 DOE Materials activities. These descriptions are presented according to the organizational structure of the Department. A mission statement, a budget summary table listing the project titles and FY 1995 funding, and detailed project summaries are presented for each Assistant Secretary office and the Office of Energy Research. The project summaries also provide DOE, laboratory, academic and industrial contacts for each project, as appropriate.

FY 1995 BUDGET SUMMARY TABLE FOR DOE MATERIALS ACTIVITIES

(These numbers represent materials-related activities only. They do not include those portions of program budgets which are not materials related.)

| | <u>FY 1995</u> |
|--|------------------|
| <u>Office of Building Technology, State and Community Programs</u> | \$ 800,000 |
| Office of Building Systems | 800,000 |
| <u>Office of Industrial Technologies</u> | \$31,142,477 |
| Office of Waste Reduction Technologies | 825,000 |
| Waste Material Management Division | 825,000 |
| Solar Materials Research | 825,000 |
| Office of Industrial Processes | 30,317,477 |
| Advanced Industrial Materials Program | 8,932,000 |
| Advanced Turbine Systems Program | 11,000,000 |
| Heat Exchanger Program | 2,108,477 |
| Continuous Fiber Ceramic Composites (CFCC) Program | 8,277,000 |
| <u>Office of Transportation Technologies</u> | \$24,851,000 |
| Office of Transportation Materials | 12,646,000 |
| Office of Propulsion Systems | 12,205,000 |
| Advanced Propulsion Division | 7,595,000 |
| Electric and Hybrid Propulsion Division | 4,610,000 |
| <u>Office of Utility Technologies</u> | \$33,740,000 |
| Office of Solar Energy Conversion | 15,200,000 |
| Photovoltaic Energy Technology Division | 15,200,000 |
| Office of Renewable Energy Conversion | 540,000 |
| Geothermal Division (GD) | 540,000 |
| Office of Energy Management | 18,000,000 |
| Advanced Utility Concepts Division | 18,000,000 |
| Superconductivity Systems Program | 18,000,000 |

FY 1995 BUDGET SUMMARY TABLE FOR DOE MATERIALS ACTIVITIES (Continued)

| | <u>FY 1995</u> |
|---|-------------------|
| <u>Office of Energy Research</u> | \$358,555,719 |
| Office of Basic Energy Sciences | 295,610,365 |
| Division of Materials Sciences | 275,708,000 |
| Division of Chemical Sciences | 5,800,000 |
| Division of Engineering and Geosciences | 6,559,365 |
| Engineering Sciences Research | 4,114,376 |
| Geosciences Research | 2,444,989 |
| Division of Advanced Energy Projects | 7,543,000 |
| Office of Fusion Energy | 22,870,000 |
| Small Business Innovation Research Program | 39,175,749 |
| Small Business Technology Transfer Program | 899,605 |
| <u>Office of Environmental Management</u> | \$ 30,489,600 |
| Office of Waste Management | 7,563,600 |
| High Level Waste Division | 7,563,600 |
| Office of Science and Technology | 22,926,000 |
| <u>Office of Nuclear Energy, Science and Technology</u> | \$ 48,165,000 |
| Office of Engineering and Technology Development | 2,165,000 |
| Space and National Security Programs | 2,165,000 |
| Office of Naval Reactors | 46,000,000* |
| <u>Office of Civilian Radioactive Waste Management</u> | \$ 9,700,000 |
| <u>Office of Defense Programs</u> | \$ 90,355,000 |
| The Weapons Research Development and Test Program | 90,355,000 |
| Sandia National Laboratories | 42,452,000 |
| Lawrence Livermore National Laboratory | 20,876,000 |
| Los Alamos National Laboratory | 27,027,000 |

*This excludes \$44 million for the cost of irradiation testing in the Advanced Test Reactor (ATR).

FY 1995 BUDGET SUMMARY TABLE FOR DOE MATERIALS ACTIVITIES (Continued)

| | <u>FY 1995</u> |
|---------------------------------------|----------------------|
| <u>Office of Fossil Energy</u> | \$ 7,668,000 |
| Office of Advanced Research | 7,668,000 |
| Fossil Energy AR&TD Materials Program | <u>7,668,000</u> |
| TOTAL | \$635,466,796 |